

We claim:

1. A recording apparatus for recording a data stream including one or more packetized video streams, comprising:

detection means for detecting a random-access point of said data stream;

obtaining means for obtaining an address of said random-access point;

distinguishing means for distinguishing a packet having said address according to packet identification information included in said one or more packetized video streams;

data-base creation means for creating a data base including said address and said packet identification information; and

recording means for recording said data base separately from said data stream on a recording medium.

2. The recording apparatus of claim 1, wherein said detection means detects a random-access point according to a video sequence_header_code in said data stream.

3. The recording apparatus of claim 1, further comprising:

extraction means for extracting playback time information from said one or more packetized video streams; and

wherein said data-base creation means creates a data base of said playback time information and said packet identification information.

4. The recording apparatus of claim 1, wherein said distinguishing means distinguishes programs according to a program-map-table.

5. The recording apparatus of claim 1, wherein said data base creation

means creates a data base for each of a plurality of video versions of a particular video program.

6. ~~A~~ method for recording a data stream including one or more packetized video streams, comprising the steps of:

detecting a random-access point of said data stream;

obtaining an address of said random-access point;

distinguishing a packet having said address according to packet identification information included in said one or more packetized video streams;

creating a data base including said address and said packet identification information; and

recording said data base separately from said data stream on a recording medium.

7. The recording method of claim 6, wherein said random-access point is detected according to a video sequence_header_code in said data stream.

8. The recording method of claim 6, further comprising the step of extracting playback time information from said one or more packetized video streams; and wherein said data-base further includes said playback time information.

9. The recording method of claim 6, wherein said programs are distinguished according to a program map table.

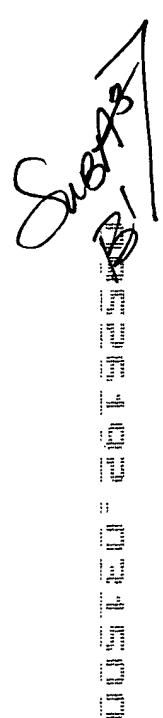
10. The recording method of claim 6, wherein a data base is created for each of a plurality of video versions of a particular video program.

11. A reproducing apparatus for reproducing a data stream from a recording medium on which are recorded one or more packetized video streams and a random-access information table including positional information indicative of a position of one or more

random-access points, with a separate random-access information table being generated and stored on said recording medium corresponding to each of one or more video programs, comprising:

reproducing means for reproducing from said recording medium one or more of said video programs and said corresponding random-access information table; and control means for controlling, according to said random-access information table, an access point during a random-access playback operation.

12. The reproducing apparatus of claim 11, further comprising:
 - selecting means for selecting one or more of said video programs from video programs included in said data stream.
13. The reproducing apparatus of claim 11, wherein each of said random-access information tables is stored on said recording medium as a file separately from said data stream.
14. The reproducing apparatus of claim 11, wherein said positional information includes address information indicative of an address of said recording medium corresponding to said one or more random-access points.
15. The reproducing apparatus of claim 11, wherein said positional information includes time stamp information indicative of a playback time corresponding to each of said random-access points.
16. The reproducing apparatus of claim 11, wherein said data stream is composed of a transport stream defined by an MPEG standard.
17. The reproducing apparatus of claim 11, wherein positional information is formed for each of a plurality of versions of a video program.

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18. A method for reproducing a data stream from a recording medium on which are recorded one or more packetized video streams and a random-access information table including positional information indicative of a position of one or more random-access points, with a separate random-access information table being formed and stored on said recording medium corresponding to each of one or more video programs, comprising the steps of:

reproducing from said recording medium one or more of said video programs and said corresponding random-access information table; and

controlling an access point during a random-access playback operation, according to said random-access information table.

19. The reproducing method of claim 18, further comprising the step of:

selecting one or more of said video programs from video programs included in said data stream.

20. The reproducing method of claim 18, wherein each of said random-access information tables is stored on said recording medium as a file separately from said data stream.

21. The reproducing method of claim 18, wherein said positional information includes address information indicative of an address of said recording medium corresponding to said one or more random-access points.

22. The reproducing method of claim 18, wherein said positional information includes time stamp information indicative of a playback time corresponding to each of said random-access points.

23. The reproducing method of claim 18, wherein said data stream is composed of a transport stream defined by an MPEG standard.

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24. The reproducing method of claim 18, further comprising the step of: forming positional information for each of a plurality of versions of a video program.

25. A computer program operable to instruct a multi-purpose computer to record a data stream including one or more packetized video streams, said computer program comprising instructions of:

detecting a random-access point of said data stream;

obtaining an address of said random-access point;

distinguishing a packet from said address according to packet identification information included in said one or more packetized video streams;

creating a data base including said address and said packet identification information; and

recording said data base separately from said data stream on a recording medium.

26. The computer program of claim 25, wherein said random-access point is detected according to a video sequence_header_code in said data stream.

27. The computer program of claim 25, further comprising the instruction of extracting playback time information from said one or more packetized video streams; and wherein said data-base further includes said playback time information.

28. The computer program of claim 25, wherein said programs are distinguished according to a program map table.

29. The computer program of claim 25, wherein a data base is created for each of a plurality of video versions of a particular video program.

30. A recording medium on which is recorded at least one video program formed of a data stream comprised of one or more packetized video streams and a random-access information table including positional information indicative of a position of one or more random-access points, with a separate random-access information table being associated with each of said video programs, said recording medium being formed by a method comprising the steps of:

detecting a random-access point of said data stream;
obtaining an address of said random-access point;
distinguishing a packet having said address according to packet identification information included in said one or more packetized video streams;
creating a data base including said address and said packet identification information; and
recording said data base separately from said data stream on said recording medium.

31. The recording medium of claim 30, wherein said random-access point is detected according to a video sequence_header_code in said data stream.

32. The recording medium of claim 30, further comprising extracting playback time information from said one or more packetized video streams; and wherein said data-base further includes said playback time information.

33. The recording medium of claim 30, wherein said programs are distinguished according to a program map table.

34. The recording medium of claim 30, wherein a data base is created for each of a plurality of video versions of at least one of said video programs.

35. Apparatus for recording on a recording medium a data stream that includes a plurality of multiplexed video programs, comprising:

distinguishing means for distinguishing each of said plurality of said video programs;

detecting means for detecting one or more random-access points of one or more of said video programs;

obtaining means for obtaining positional information indicative of a position of each of said detected random-access points in said data stream;

generating means for generating a random-access information table including said positional information for each of said video programs; and

recording means for recording said data stream and said random-access information on said recording medium.

36. The apparatus of claim 35, further comprising means for generating a file that includes said random-access information table separately from a file that includes said data stream.

37. The apparatus of claim 35, further comprising selecting means for selecting one or more of said video programs from said video programs included in said data stream for playback.

38. The apparatus of claim 35, wherein said positional information includes address information indicative of an address on said recording medium corresponding to one of said random-access points.

39. The apparatus of claim 35, wherein said positional information includes a time stamp indicative of a recording time corresponding to at least one of said

random-access points.

40. The apparatus of claim 35, wherein said data stream is composed of a transport stream defined by an MPEG standard.

41. The apparatus of claim 35, wherein said detecting means detects each of said random-access points according to a corresponding random-access indicator included in a header of each of a plurality of transport packets making up said data stream.

42. The apparatus of claim 41, wherein said distinguishing means distinguishes each of said video programs according to a packet identification included in said data stream and a program map table included in said data stream.

43. The apparatus of claim 35, wherein said distinguishing means further comprises version distinguishing means for distinguishing a plurality of versions of at least one of said plurality of multiplexed programs from each other; and wherein said generating means generates a random-access information table for each said version.

44. A method for recording on a recording medium a data stream that includes a plurality of multiplexed video programs, comprising the steps of:

distinguishing each of said plurality of said video programs;
detecting one or more random-access points of one or more of said video programs;

obtaining positional information indicative of a position of each of said detected random-access points in said data stream;

generating a random-access information table including said positional information for each of said video programs; and

recording said data stream and said random-access information on said

recording medium.

45. The method of claim 44, further comprising the step of generating a file that includes said random-access information table separately from a file that includes said data stream.

46. The method of claim 44, further comprising the step of selecting one or more of said video programs from said video programs included in said data stream for playback.

47. The method of claim 44, wherein said positional information includes address information indicative of an address on said recording medium corresponding to one of said random-access points.

48. The method of claim 44, wherein said positional information includes a time stamp indicative of a recording time corresponding to at least one of said random-access points.

49. The method of claim 44, wherein said data stream is composed of a transport stream defined by an MPEG standard.

50. The method of claim 44, wherein each of said random-access points is detected according to a corresponding random-access indicator included in a header of each of a plurality of transport packets comprising said data stream.

51. The method of claim 50, wherein each of said video programs is distinguished according to a packet identification and a program map table included in said data stream.

52. The method of claim 44, further comprising the steps of:
distinguishing a plurality of versions of one of said video programs

from each other; and

generating a random-access information table for each said version.

53. A reproducing apparatus for reproducing a data stream from a recording medium on which are recorded a plurality of multiplexed video programs and a random-access information table including positional information indicative of a position of each of a plurality of random-access points, wherein a corresponding random-access information table is recorded for each of said video programs, comprising:

reproducing means for reproducing from said recording medium one or more of said video programs and said corresponding random-access information table; and control means for controlling, according to said random-access information table, an access point during a random-access playback operation.

54. The reproducing apparatus of claim 53, further comprising:

selecting means for selecting one or more of said video programs from said video programs included in said data stream.

55. The reproducing apparatus of claim 53, wherein each of said random-access information tables is stored on said recording medium as a file separately from said data stream.

56. The reproducing apparatus of claim 53, wherein said positional information includes address information indicative of an address of said recording medium corresponding to one of said random-access points.

57. The reproducing apparatus of claim 53, wherein said positional information includes a time stamp indicative of a recording time corresponding to each of said random-access points.

58. The reproducing apparatus of claim 53, wherein said data stream comprises at least one transport stream defined by an MPEG standard.

59. The reproducing apparatus of claim 53, wherein said positional information is formed for each of a plurality of versions of a video program.

60. A method for reproducing a data stream from a recording medium on which are recorded a plurality of multiplexed video programs and a random-access information table including positional information indicative of a position of each of a plurality of random-access points, wherein a corresponding random-access information table is recorded for each of said video programs, comprising the steps of:

reproducing one or more of said video programs and said corresponding random-access information table from said recording medium; and

controlling an access point during a random-access playback operation according to said random-access information table.

61. The method of claim 60, further comprising the step of:

selecting one or more of said video programs from said video programs included in said data stream.

62. The method of claim 60, wherein each of said random-access information tables is stored on said recording medium as a file separately from said data stream.

63. The method of claim 60, wherein said positional information includes address information indicative of an address of said recording medium corresponding to one of said random-access points.

64. The method of claim 60, wherein said positional information includes a time stamp indicative of a playback time corresponding to each of said random-access points.

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65. The method of claim 60, wherein said data stream comprises at least one transport stream defined by an MPEG standard.

66. The method of claim 60, wherein said positional information is formed for each of a plurality of versions of a video program.

67. A recording medium for storing video data, comprising:
a region for storing a data stream including a plurality of multiplexed video programs; and
a region for storing one or more random-access information tables including positional information indicative of a position of at least one random-access point, wherein a random-access information table is associated with each of said video programs.

68. The recording medium of claim 67, wherein said random-access information table is stored as a file separately from said data stream.

69. The recording medium of claim 67, wherein said positional information includes address information indicative of an address on said recording medium corresponding to one of said random-access points.

70. The recording medium of claim 67, wherein said positional information includes a time stamp indicative of a playback time corresponding to at least one of said random-access points.

71. The recording medium of claim 67, wherein said data stream comprises at least one transport stream defined by an MPEG standard.

72. The recording medium of claim 67, wherein a random-access information table is formed for each of a plurality of versions of at least one of said plurality of multiplexed video programs.

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73. A computer program operable to instruct a programmable processor to store video data to a recording medium having:

an instruction for storing a video data stream including a plurality of multiplexed video programs into a first region of said recording medium; and

an instruction for storing to a second region of said recording medium one or more random-access information tables including positional information indicative of a position of at least one random-access point, wherein a random-access information table is associated with each of said video programs.

74. The computer program of claim 73, wherein said random-access information table is stored on said recording medium as a file separately from said data stream.

75. The computer program of claim 73, wherein said positional information includes address information indicative of an address on said recording medium corresponding to one of said random-access points.

76. The computer program of claim 73, wherein said positional information includes a time stamp indicative of a recording time corresponding to at least one of said random-access points.

77. The computer program of claim 73, wherein said data stream comprises at least one transport stream defined by an MPEG standard.

78. The computer program of claim 73, wherein a random-access information table is formed for each of a plurality of versions of at least one of said plurality of video programs.